MANITOBA ROADSIDE SURVEY OF NIGHT-TIME DRIVING BEHAVIOR REPORT

MANITOBA:
ATTORNEY GENERAL
HIGHWAYS AND TRANSPORTATION
MANITOBA PUBLIC INSURANCE CORPORATION

MANITOBA ROADSIDE SURVEY OF NIGHT-TIME DRIVING BEHAVIOR

JOINT UNDERTAKING BY:

FEDERAL (MINISTRY OF TRANSPORT)
and
PROVINCIAL (ATTORNEY-GENERAL, HIGHWAYS & M.P.I.C.)

GOVERNMENTS

REPORT PREPARED BY:
CANDICE MINCH
RESEARCH, PLANNING & EVALUATION BRANCH
MANITOBA ATTORNEY-GENERAL
MARCH, 1988

ACKNOWLEDGMENTS

The Manitoba Roadside Survey of Night-Time Drivers was organized and coordinated by the following provincial inter-departmental committee:

Candice Minch, Research and Planning,
Department of the Attorney-General.

Jodie Roy, Law Enforcement Services,
Department of the Attorney-General

Maureen Grant, Driver and Vehicle Licensing
Department of Highways and Transportation

The committee wishes to acknowledge the following for their contributions:

To John Lawson, Del Stuart and Randy Sanderson from the Federal Ministry of Transport for organizing and carrying out the survey in Manitoba; and to Dave Hieatt for his invaluable assistance.

To the Manitoba Public Insurance Corporation for their generous financial support and cooperation.

To the participating officers from the Winnipeg Police Department, the R.C.M.P., the Brandon City Police and the Winkler Police Department for their cooperation and assistance. Special thanks to Supt. M. Allen and S/Sgt. E. Rodger.

To the members of the Provincial Traffic Safety Committee for their interest in the project.

To Ray Johnson and Wes Langley, the two survey crew chiefs, for their on-site management and commitment which assured the survey's overall success.

To all members of the two survey crews for their enthusiasm and skill in interviewing Manitoba night-time drivers.

And finally, special thanks are extended to Manitoba motorists for their cooperation and participation.

TABLE OF CONTENTS

	Page No.
I. BACKGROUND	1
II. INTRODUCTION	2
III. SURVEY PARTICIPATION	3
IV. SURVEY RESULTS	
A. WEIGHTING PROCEDURE USED FOR SURVEY RESULTS	5
B. OVERALL RESULTS	
1. DEMOGRAPHICS	6
2. NIGHT-TIME DRIVING PATTERNS	7
3. BLOOD ALCOHOL CONTENT LEVELS	8
4. ATTITUDES TOWARD DRINKING AND DRIVING	11
C. RELATIONSHIP BETWEEN NIGHT-TIME DRIVING AND B.A.C. LEVELS	
1. B.A.C. BY DEMOGRAPHICS	15
2. B.A.C. BY NIGHT-TIME DRIVING PATTERNS	17
V. SUMMARY OF SURVEY RESULTS	20

APPENDICES

APPENDIX 1: Characteristics of Night-Time Drivers in Manitoba
APPENDIX 2: Characteristics of Night-Time Drivers in Winnipeg
APPENDIX 3: Characteristics of Night-Time Drivers in 'Other Manitoba'

MANITOBA ROADSIDE SURVEY OF NIGHT-TIME DRIVING BEHAVIOR

1. BACKGROUND

A survey of night-time driving behavior was conducted throughout the province of Manitoba in October of 1986. Planning and preparation for the survey was a joint undertaking between the Federal Government (Ministry of Transport) and the Province (Attorney-General, Highways and Transportation and the Manitoba Public Insurance Corporation). There have already been a number of roadside surveys conducted in Canada, beginning with a national survey in 1974, followed by joint federal/provincial surveys in Quebec, Saskatchewan and British Columbia (1981). These surveys were refined over time and produced among the most reliable results (average refusal rate of 3%), when compared to similar surveys conducted in other countries. In addition to Manitoba's survey, Transport Canada conducted surveys with Ontario and Quebec in 1986.

Preparation for the survey was extensive and involved considerable input from the Federal Ministry of Transport. They provided the basic survey method and sampling plan, questionnaire design and production, provision of breath-testing equipment, interviewer training, supervision/on-site quality control, data processing and data analysis. At the provincial level, the departments and agencies involved were responsible for refining the questionnaire to satisfy provincial information requirements, hiring of survey crews and crew chiefs, wages/travel/accommodation for survey crews, obtaining and coordinating the necessary police support, and providing the site equipment for the survey. Both governments had input into the overall survey planning, the design of the organizational and logistical schedule and the media relations, with the province taking the lead in these areas. Provincial funding of $42,000. for the survey was provided by the Manitoba Public Insurance Corporation.

II. INTRODUCTION

The Manitoba Roadside Survey was conducted from October 8-November 5, 1986 and involved surveying motorists in the province from Wednesday to Saturday of each week from the hours of 9 p.m. to 3 a.m.. Survey sites were chosen by using a systematic random sampling method which provided for survey coverage along many of the main roadways in cities and towns in the province.

Near each site a road sign alerted motorists that a survey was being conducted and advised them to slow down. Police functioned in the essential duty of traffic control by directing the first oncoming car onto the survey site (located away from the road) only when there was an available survey interviewer; this prevented any waiting on the part of motorists who were asked to participate in the survey. Verbal contact and the conducting of the interview with motorists were the responsibility of the specially trained survey interviewers and crew chiefs.

Participation in the survey was voluntary and included questions on driver demographics, driving patterns, attitudes regarding drinking and driving, and an alcohol breath test. The interview itself took on average about five minutes to complete, including the sample breath test. The provision of the breath sample was voluntary; drivers who were over the legal limit were asked to find an alternate means of reaching their destination. The survey interviewers assisted drivers in reaching their destination, including having a sober passenger drive the car, calling a taxi, calling for someone to drive the car home or having the person walk, if they were close to their destination.

The survey was conducted in 96 sites in the province. There were 32 in Winnipeg, 16 in outlying Winnipeg areas and 48 sites in other areas in the province. In total, there were 3,910 motorists asked to participate in the survey.

III. SURVEY PARTICIPATION

There were 3910 motorists asked to participate in the survey with 3804 of the drivers agreeing to take part in the interview, resulting in a 2.7% survey refusal. A breakdown of survey participation and provision of a breath sample was as follows:

Survey Interview Participation:	Number	Percent
Total Motorists Selected	3910	100.0
Interview Refusal	106	2.7
Total Sample Size	3804	97.3
Provision of Breath Sample:		
Total Sample Size	3804	100.0
Breath Sample Refusal	77	2.0
Equipment Failure	19	.5
Unable to Provide Breath Sample (ie., Medical Reasons)	75	2.0
Total Breath Sample Provided	3633	95.5

The great majority of those drivers who took part in the interview also provided a breath sample (95.5%) leaving a non-provision of breath sample among survey respondents of 4.5%. When the total non-provision of a breath sample was examined, by including those motorists who refused to be interviewed (n=106), the non-provision of breath samples stood at 7.1%. This resulted in 92.9% of the motorists selected who completed all stages of the survey.

Differences emerged with respect to Winnipeg and the other areas of the province. Refusal to participate in the survey, while low overall, was just over two times greater in Winnipeg (4.2%) when compared to the other areas of the province (2.0%). Similarly, the breath sample refusal was higher in Winnipeg (5.4%) than in the other areas in Manitoba (3.9%).

Reasons given by motorists for not participating in the survey (n=106) were varied, but most often concerned being in a hurry and not having the time (53%), followed by not being interested in participating (6%); uncooperative (6%); and language problem (5%). Non-provision of a

breath sample by survey participants (n=152) primarily involved an inability to provide a breath sample for medical or health reasons (44%), being against civil rights (16%), fear of prosecution (9%) and language problem (5%).

Among those drivers who participated in the survey (n=3,804), almost all had vehicles with Manitoba license plates (97%) as opposed to out of province plates (3%).

IV. SURVEY RESULTS

A. WEIGHTING PROCEDURE USED FOR SURVEY RESULTS

The site selection and subsequent weighting of the data was developed and applied by Transport Canada. The target universe was composed of all drivers of cars, light trucks, vans or motorcycles travelling during the hours of 9:00 p.m.-3 a.m. on Wednesday to Saturday nights, on arterial roads or highways, in or adjacent to centres of at least 5000 population. A stratified multi-stage sample design for the province selected population centres within five size strata. Within centres, road segments were selected from lists of all available segments; then one site per segment was chosen at random, from lists of all qualified sites (ie., with the required off-road space: usually a service station, or alternatively the parking lot of a supermarket, church or school). The total number of sites selected in Manitoba was 96.

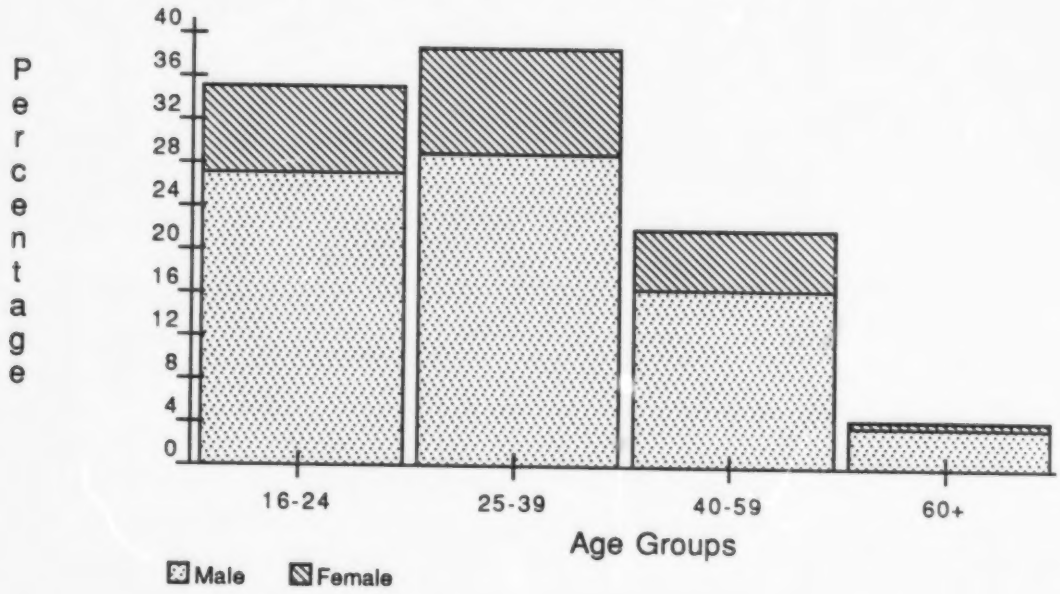
Weighting of the subjects' responses by site and community traffic in the survey periods, and by community population, allowed for estimates to be made of the characteristics of all drivers during the surveyed night-time periods for the province. These estimates were calculated at the 90% confidence level. The sample design also incorporated replication (based on sites), allowing sampling errors to be estimated for each of the estimated population frequencies. This allowed for the reporting of the survey results with a 90% probability of accuracy within the range of the sampling error calculated. Appendices 1, 2, and 3 provide the sampling error or variance associated with each of the variable categories.

B. OVERALL RESULTS

1. DEMOGRAPHICS

Just over three-quarters of the night-time drivers in Manitoba were male (76%). A breakdown of age groups revealed that the two youngest age groups, 16-24 (35%) and 25-39 (39%), were predominant followed by the 40-59 (22%) and the 60+ (4%) age groups. When gender was examined in relation to age groups, the following results emerged:

MANITOBA NIGHT-TIME DRIVERS: AGE GROUPS BY GENDER



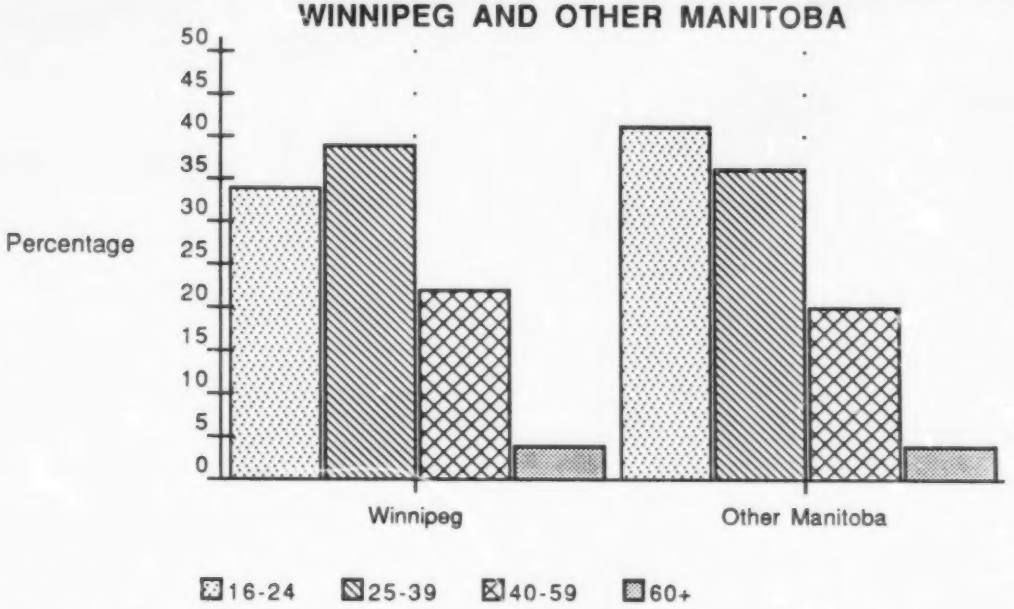
As illustrated in the above chart, the proportional distribution of three-quarter male and one-quarter female drivers remained relatively constant in relation to the age groups. The largest proportion of both male and female drivers emerged in the 25-39 year age group (29%/10%), followed closely by the 16-24 year group (27%/8%), respectively. Representation from the two older age groups was lower for both males and females: 40-59 years (16%/6%) and 60+ years (4%/1%), respectively.

The distribution of individual ages was available for the 16-24 year group, with most of the drivers' ages within that group representing

roughly 4% each of night time drivers (ranging from a low of 2% for 16 years to a high of 5% for 20 years of age).

A breakdown of age groups between the two areas of the province revealed some differences:

AGE GROUP DISTRIBUTION OF NIGHT-TIME DRIVERS, WINNIPEG AND OTHER MANITOBA



The major difference between the Winnipeg and 'Other Manitoba' groups of drivers was the greater representation of the 16-24 year age group on the road outside of Winnipeg as night-time drivers (34% and 41%, respectively). In turn, the representation of the 25-39 year age group was slightly larger in Winnipeg (39%) than in other areas of the province (36%).

2. NIGHT-TIME DRIVING PATTERNS

The type of vehicle driven was most often a passenger car (86%) when compared to light trucks/vans (13%). Less than 1% of the vehicles were motorcycles which was in part explained by the beginning of colder temperatures during October of 1986.

The survey respondents were queried as to the origin of their trip.

Just under one-half of their trips originated from either their own home (27%) or that of a friend/relative (22%). The next two largest categories were work (16%) and restaurant/bar/club (15%). Recreational activities (11%), shopping/meeting (4%) and 'other origin' (5%) comprised the remaining categories.

The length of the trip revealed that one-half (50%) of the drivers were travelling short distances of 1-8 kilometres in length. The remaining trip lengths were as follows: 9-24 km. (31%); 25-50 km. (10%); and >50 km. (9%).

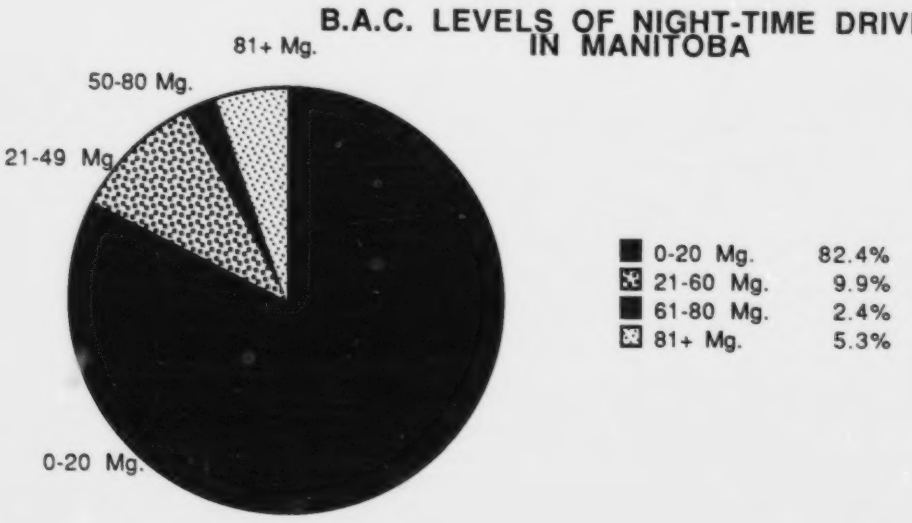
Night-time motorists were almost equally likely to be travelling alone (43%) as with one passenger in the car (38%). Drivers with two passengers (10%), three passengers (6%) and four or more passengers (2%) followed in frequency.

Seat belt use among drivers surveyed was present for three-quarters (75%) of the respondents. Among those drivers wearing seat belts, only 4% had a vehicle which was fitted with only a lap belt; the remaining drivers wearing a seat belt were wearing a seatbelt with a lap and shoulder assembly (71%). The other drivers were either not using their seat belts (24%) or were driving a vehicle not fitted for a seatbelt (1%).

The drivers who were not using a seat belt were questioned as to the reason, if any, for not wearing it. There were a variety of responses given by motorists for non-compliance in the wearing of seat belts. The most frequent reasons involved being in a hurry/short trip (22%) and the wearing of seat belts being uncomfortable/inconvenient (22%). This was followed by the motorist not believing in the use of seat belts (15%). Also, 6% of the drivers stated they did not know why they weren't using a seat belt. The wearing of belts being perceived as an infringement of one's civil rights (1%) and fear of being trapped (1%) ranked relatively low. There were 34% of the responses uncategorized and therefore falling into the 'other' reponse category.

3. BLOOD ALCOHOL CONTENT LEVELS

The majority of the respondents agreed to provide a breath sample taken from a hand-held B.A.C. level testing device. There were 4.5% of those who took part in the survey but did not provide a breath sample (2% refused; .5% equipment failure; 2% unable to provide, ie. medical reasons). Of the respondents who provided a breath sample, the following results emerged:

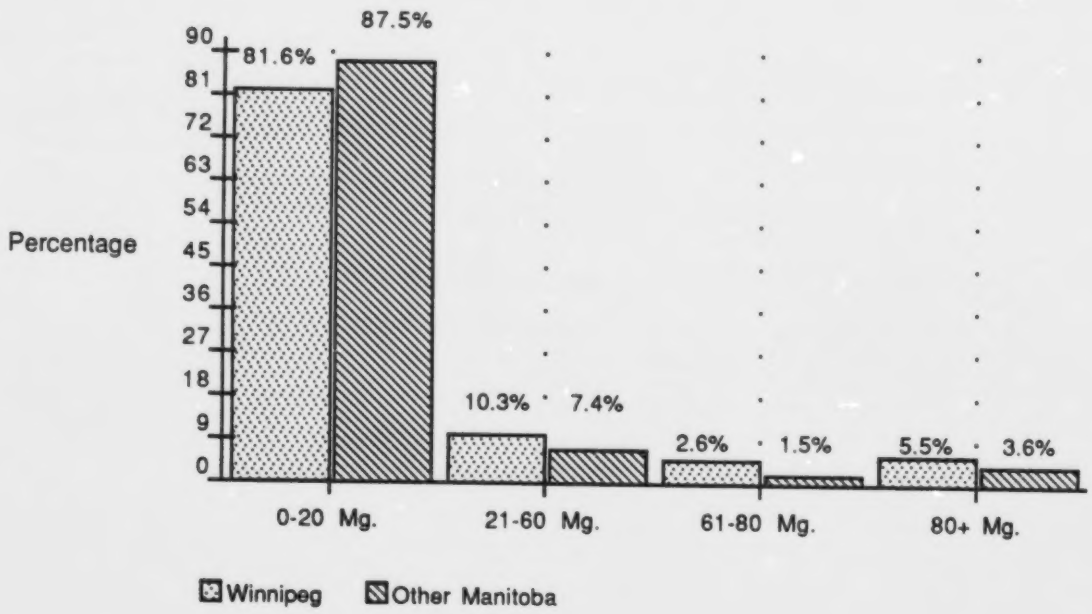


Just over 82% of night-time drivers had consumed little or no alcohol (0-20 Mg.). A further 9.9% had low to moderate levels of alcohol detected ranging from 21-60 Mg.. Higher levels (61-80 Mg.) of alcohol were found for nearly 2.4% of the drivers. The final category represents being over the legal limit, designated as 81+ Mg., with just over 5% of the drivers falling into that category. A further breakdown of the 81+ Mg. reading revealed that most of the drivers in this category were actually at 99 Mg. or more (4.1%) compared to falling just over the legal limit at 81-99 Mg. (1.2%). In other words, those drivers who were over the legal limit tended to be considerably over the B.A.C. reading allowed by law rather than being on the borderline of legal impairment.

In terms of viewing driving activity of Manitobans at night, one can infer from the figure of 18% of drivers having some level of alcohol in their system, that **nearly one in every five drivers on the road at night has been drinking**. Further, with 5.3% of drivers found to be over the legal limit of 80 Mg., **approximately one in twenty drivers at night are impaired drivers** as specified under the Criminal Code of Canada provisions.

Information was also available on the BAC distribution between Winnipeg and the rest of Manitoba. There were some variations which emerged when comparing the two groups:

B.A.C. LEVELS OF NIGHT-TIME DRIVERS, WINNIPEG AND OTHER MANITOBA

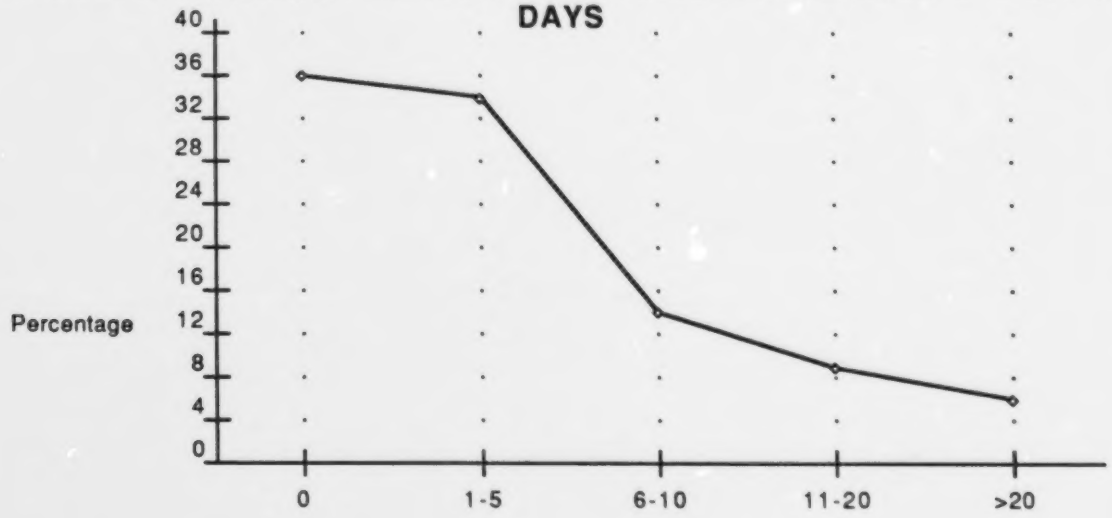


As indicated in the above chart, Winnipeg drivers tended to be slightly higher in each of the B.A.C. categories after the 0-20 Mg.. The largest difference occurred in the 0-20 category with 81.6% of Winnipeg drivers and 87.5% of 'other Manitoba' drivers falling into that category. Conversely, as the B.A.C. level increased, Winnipeg drivers had higher representation with the final category of 80+ Mg. accounting for 5.5% of Winnipeg compared with 3.6% of 'Other Manitoba' drivers.

Several questions were asked of those drivers whose B.A.C. registered at 21 or more Mg. (represents an estimate of 685 night-time drivers during the survey period). When those drivers were asked if they thought they were over the legal limit, 49% replied in the negative and 11% responded in the affirmative. A further 41% said they did not know or refused to answer. The same drivers were also questioned as to where most of their drinking had been done that night. The following results emerged: 36% (own home, friend/relative's home); 44% (bar/club/tavern/special license event,ie.social/banquet); 20% (vehicle/restaurant/other). Finally, the group was asked if anyone had discouraged them from driving their car with 98% saying no, 2% saying yes.

Night-time drivers were asked to estimate the number of alcoholic drinks they had consumed in the last seven days. 64% said they had consumed at least one drink, while 36% said they had not consumed any alcoholic beverages.

MANITOBA: NUMBER OF ALCOHOLIC DRINKS CONSUMED IN LAST 7 DAYS



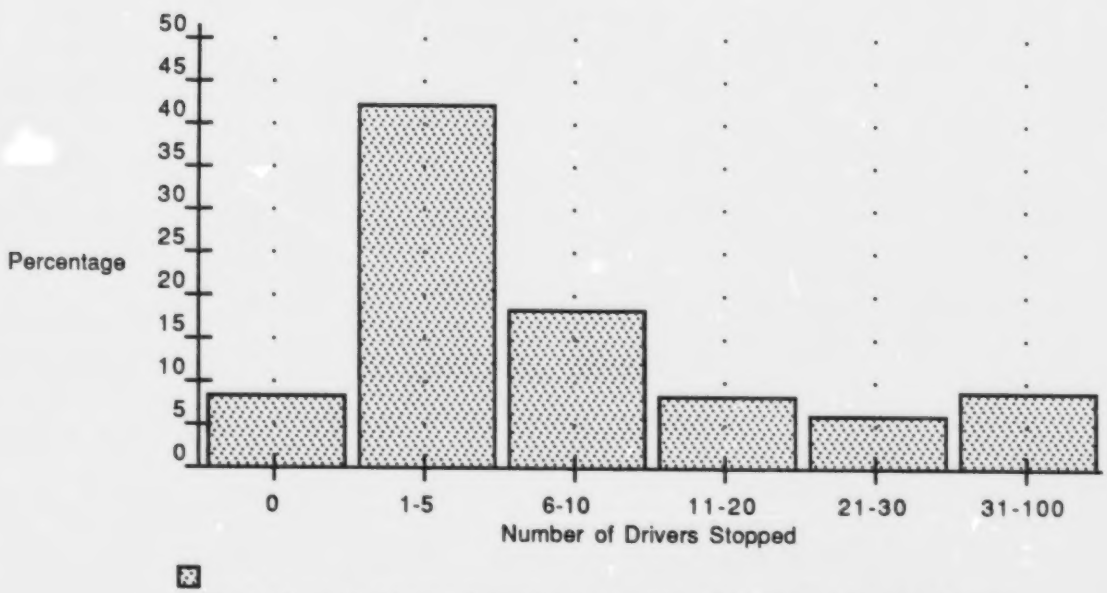
Among those drivers who had consumed alcohol, 34% drank from 1-5 drinks while 29% drank 11 or more drinks for the 7 day period. Further, 9% had from 11-20 drinks and 6% had 20 drinks or more during the

previous 7 days. Just under 1% of the respondents replied that they could not estimate the number of drinks consumed during the above time period.

4. ATTITUDES TOWARD DRINKING AND DRIVING

Public perceptions about the likelihood of being detected for driving over the legal limit were guaged by asking night-time drivers how many motorists would likely be stopped by the police out of every 100 legally impaired drivers on the road. The risk of being detected by the police for impaired driving was perceived as being minimal, based on the responses from night-time drivers:

PUBLIC ATTITUDES IN MANITOBA: NUMBER OF DRIVERS STOPPED BY THE POLICE OUT OF EVERY 100 LEGALLY IMPAIRED DRIVERS ON THE ROAD

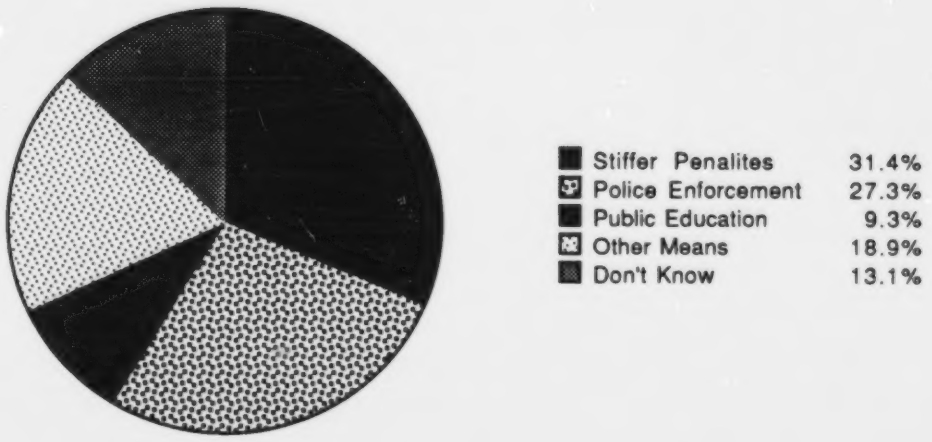


Over one-half of the drivers (51%) estimated that 5 or fewer drivers out of every 100 legally impaired drivers would be stopped by the police, which included 8% of motorists who felt that no impaired drivers would be detected. A further 18% of the drivers replied that from 6-10 impaired

drivers would be stopped while the remaining 24% estimated from 11 to 100 drivers would be stopped. Finally, 8% of the night-time drivers said they could not provide an estimate.

The drivers were queried as to the most effective means of deterring drinking and driving.

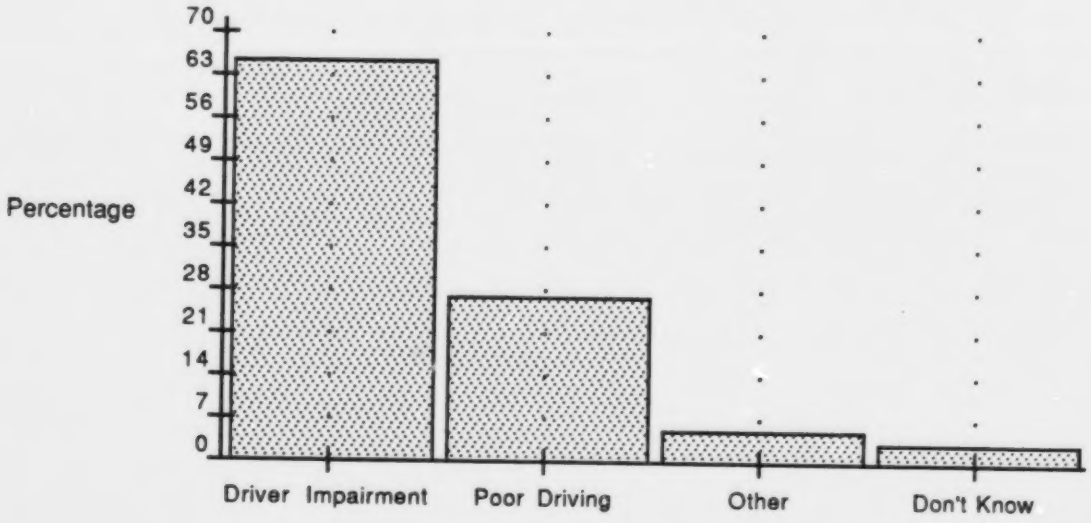
PUBLIC PERCEPTIONS IN MANITOBA: MOST EFFECTIVE MEANS OF DETERRING DRINKING AND DRIVING



The preference for deterrence by way of the law was reflected in the major responses of stiffer penalties and more police enforcement (59%). More public education about drinking and driving was cited by 9% of the drivers. 19% cited combinations of the above and other means. A higher drinking and/or higher driving age was advocated by only about 2% of the drivers.

The final question dealing with public perceptions asked drivers what they thought was the major cause of serious traffic accidents:

PUBLIC PERCEPTIONS IN MANITOBA: MAJOR CAUSE OF SERIOUS TRAFFIC ACCIDENTS



'Other' causes (5%) includes vehicle defects, environmental factors and other causes with the first two categories constituting the bulk of the responses.

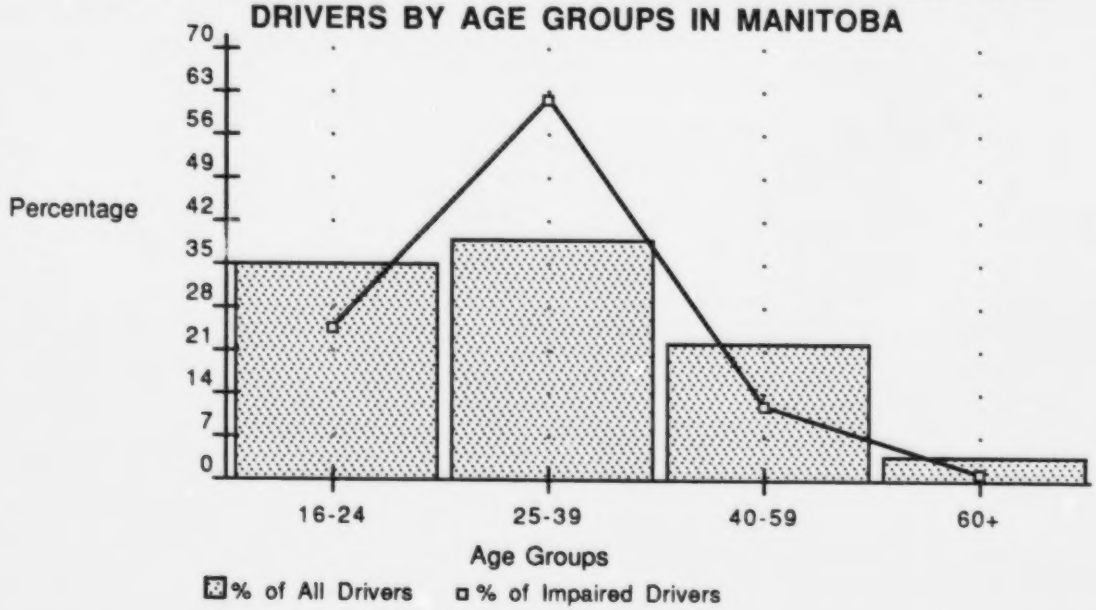
The responses indicated that the majority of drivers (65%) thought that driver impairment was the major cause of serious traffic accidents. Poor driving was seen as the major cause by 27%, with other causes identified by 5% of the motorists. Finally, 3% of the drivers did not know the major cause of serious vehicle accidents.

C. RELATIONSHIP BETWEEN NIGHT-TIME DRIVERS AND B.A.C. LEVELS

1. B.A.C. BY DEMOGRAPHICS

When age groups were examined in relation to total night-time drivers and impaired drivers in Manitoba, the following results emerged:

PROPORTION OF ALL NIGHT-TIME DRIVERS AND IMPAIRED DRIVERS BY AGE GROUPS IN MANITOBA

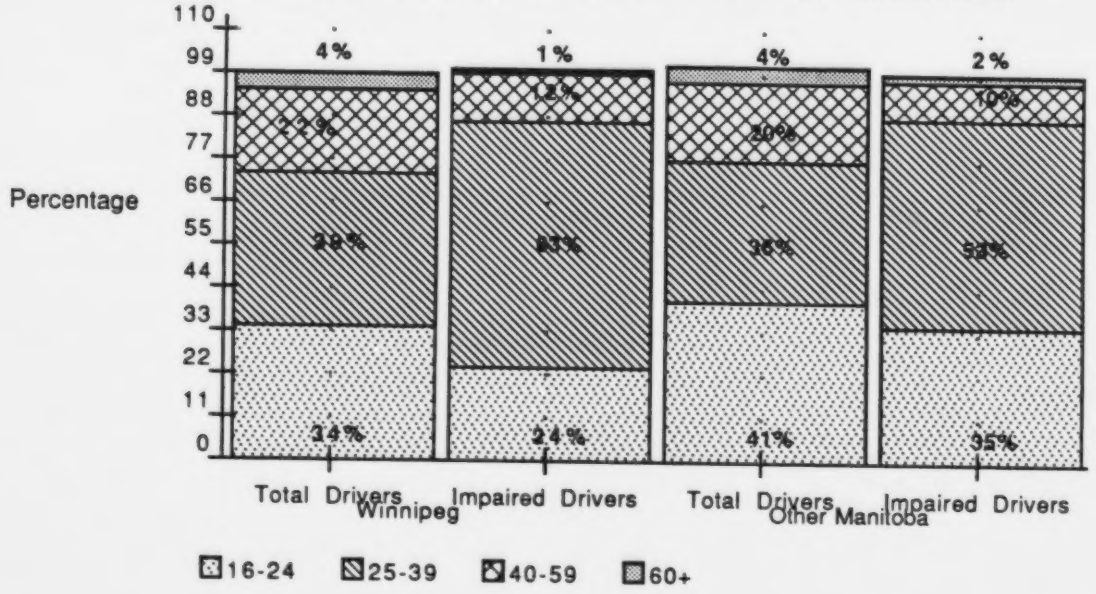


Results from the survey revealed that only the 25-39 age group had a higher proportion of impaired drivers than total drivers at night. This group comprised 39% of total night-time drivers and 62% of impaired drivers. The next largest proportion of night-time drivers is found in the 16-24 year age group with 35% of total drivers and 25% of impaired drivers. In total, over eighty percent of impaired drivers are found in the 16 to 39 year groups. The two oldest age groups had both the lowest proportion of night-time drivers and impaired drivers: 40-59 years (22% total drivers/12% impaired drivers); and, 60+ years (4% total drivers/1%

impaired drivers).

An age group breakdown of night-time drivers and impaired drivers for Winnipeg and the rest of the province provided the following information:

PROPORTION OF ALL NIGHT-TIME DRIVERS AND IMPAIRED DRIVERS BY AGE GROUPS IN WINNIPEG AND 'OTHER MANITOBA'



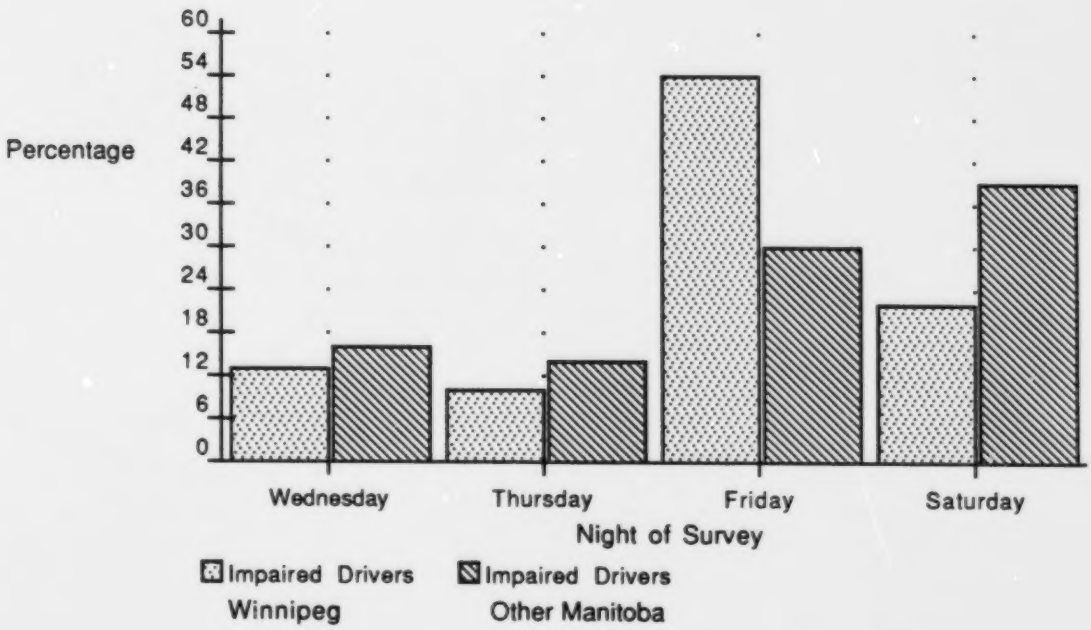
The results for Winnipeg paralleled the overall results for the province in terms of the distribution of night-time drivers and driver impairment.

The major difference which emerged for areas outside of Winnipeg was the greater representation of the 16-24 year age group as both night-time drivers (41%) and impaired drivers (35%). However, the 25-39 age group still remained the only one with a higher representation as impaired drivers (53%) when compared to their overall presence as night-time drivers (36%).

2. B.A.C. BY NIGHT-TIME DRIVING PATTERNS

Night-time driving behavior and patterns were examined by looking at the proportion of impaired night-time drivers over each of the four survey nights:

PROPORTION OF IMPAIRED NIGHT-TIME DRIVERS BY NIGHT OF SURVEY



The frequency of impairment for the Wednesdays and Thursdays in October when the survey was conducted were relatively low for Winnipeg and 'Other Manitoba' with Thursdays emerging as the lowest for each of the areas. Impairment levels in Winnipeg amongst night-time drivers were considerably higher for the weekend nights with Fridays being the highest night (54%) followed by Saturday (22%) out of total impairment over the four nights. However, even with substantial variability associated with the above proportions for weekend nights in Winnipeg*, Friday emerged as the predominant night for the occurence of impaired driving in Winnipeg.

* (+- 13.8) for Fridays; (+- 10.9) for Saturdays. See Appendix 2.

A difference emerged when examining 'Other Manitoba' for the weekend nights surveyed during the month of October with driver impairment more evenly distributed (30%/Fridays; 39%/Saturdays) than Winnipeg.

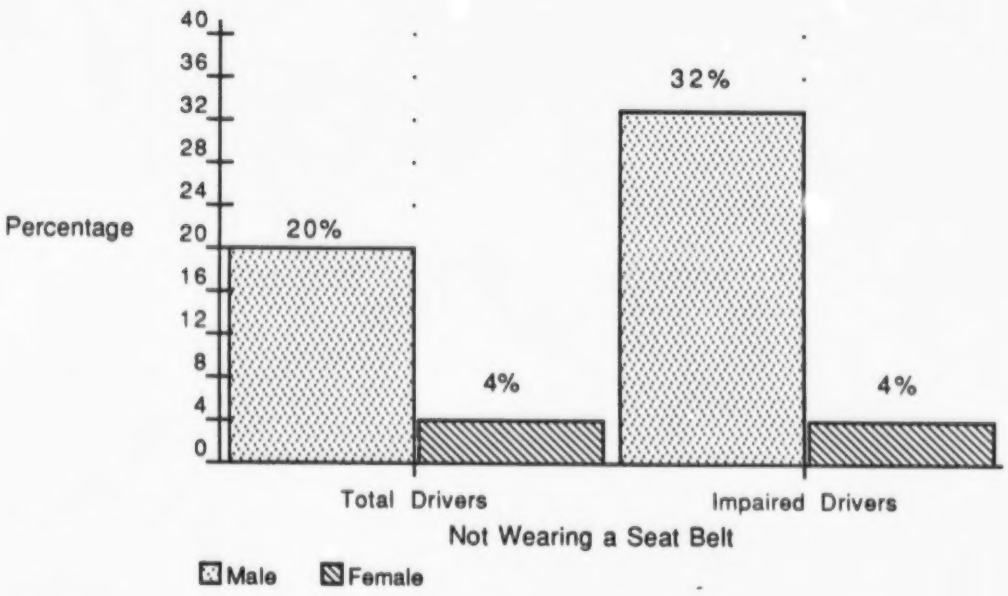
When the number of alcoholic drinks consumed in one week by night-time drivers was analyzed, the results showed that 36% of all drivers stated they had not had any alcoholic drinks in the last week, while 1% of impaired drivers who answered similarly for that time period. In fact, 71% of all drivers stated they had from 0-5 drinks compared to 32% of impaired drivers who had consumed a similar amount over the last week. Finally, 15% of all drivers and 31% of impaired drivers estimated they had consumed 11 or more drinks in the last 7 days with 6% of all drivers and 14% of impaired drivers stating they had in excess of 20 drinks for that time period.

When those drivers with at least some alcohol (21 mg. or more) in their system were asked if they thought they were over the legal limit, the proportion of general drinking drivers (49%) and impaired drivers (51%) responding in the negative was roughly equivalent. However, more of the impaired driver population (24%) than general drinking drivers (11%) thought they were over the legal limit. In addition, 41% of general drinking drivers and 24% of impaired drivers either stated they did not know or refused to respond.

The location where most of the drinking was done by the drivers (those with a B.A.C. greater than 20 mg.) revealed that more of the general drinking and driving population (36%) had done their drinking at their own home/friend or relative's home than impaired drivers (29%). Drinking done in a bar/club/tavern/special liquor license event had 44% of both general drinking drivers and impaired drivers in that group. Finally, drinking done in vehicle/restaurant or other place occurred for 20% of general drinking drivers compared to 27% of impaired drivers. The results indicate that impaired drivers were somewhat more likely to have done their drinking at other than a private residence (71%) compared to general drinking drivers (64%).

Use of seat belts was contrasted by gender and provided the following results:

PROPORTION OF ALL NIGHT-TIME DRIVERS AND IMPAIRED DRIVERS NOT WEARING A SEAT BELT BY GENDER



As illustrated in the above chart, male drivers were less likely to wear seat belts, and their non-use tended to increase when impaired. Female drivers' non-use of seat belts was roughly equivalent at around 4%, whether impaired or not.

IV. SUMMARY OF SURVEY RESULTS

The survey results provided important information on night-time driving behavior in the province of Manitoba ranging from driver demographics to night-time driving patterns. In addition, a sample breath test included in the survey provided estimates on the extent to which motorists were drinking and driving in the night-time hours. The survey was conducted throughout Manitoba and included a total of 96 survey sites during the five week study period.

In total, there were 3,910 motorists asked to participate in the survey with 3,804 agreeing to take part. The overall refusal rate stood at 2.7% which is consistent with the low overall refusal rates for the surveys undertaken in Canada when compared to similar surveys from Europe and the United States. The great majority of those motorists who participated also provided a breath sample used to measure their blood alcohol content (95.5%). Results indicated that night-time drivers in areas outside of Winnipeg were less likely to both refuse to participate in the survey (2.0%) and to provide a breath sample (3.9%) than were their counterparts in Winnipeg (4.2% & 5.4%, respectively).

The following demographic information emerged for night-time drivers in Manitoba. Night-time drivers in the province were predominantly male (76%). The distribution of three-quarter male to one-quarter female drivers remained fairly consistent among the age groups examined. Most of the night-time drivers were in the two youngest age groups, these being 16-24 years (35%) and 25-39 years (39%). This was followed by 40-59 year (22%) and the 60+ year (4%) groups. In addition, the largest proportion of both female and male drivers were found in the two younger age groups. An age group difference emerged with respect to Winnipeg and 'Other Manitoba'. There was a higher proportion of night-time drivers in the 16-24 age group in areas outside of Winnipeg (41%) compared to Winnipeg (34%). Most of the drivers were making short trips with only 19% of the motorists travelling 25 kilometres or more. Seat belt use among motorists revealed that three-quarters of the drivers were wearing a seat belt.

The results indicate that drinking and driving is a relatively common occurrence with an estimate of nearly one out of every five drivers on the road at night having at least a moderate level of alcohol in their system. The less frequent, though more disturbing estimate, concerns the observation that one out of every twenty drivers on the road at night is operating a vehicle while legally impaired. According to the results, this is more likely to occur on a weekend night in the province and most likely involves males in the 25-39 year group followed in frequency by the 16-24 year group. In fact, the two youngest age groups comprised over eighty percent of night-time impaired drivers in the province.

Attitudes toward drinking and driving revealed that while approximately two-thirds of drivers perceived driver impairment to be the most common cause of serious traffic accidents, only 30% of drivers estimated that more than 10 out of every 100 legally impaired drivers would likely be stopped by the police.

When age groups were examined by location in the province, the following results emerged: The 16-24 year age group had a higher representation both as night-time drivers (41%) and as impaired drivers (35%) in areas outside of Winnipeg. The consistent finding, whether in Winnipeg or 'Other Manitoba', was the presence of the 25-39 year age group as the group with the highest proportion of impaired drivers (63% in Wpg./53% in 'Other Manitoba').

In summary, the findings which can be applied to night-time drivers in the province, have provided important information on the characteristics of drivers and their driving habits. The results offer insight into a number of relevant areas including driver attitudes, driving patterns, seat belt use and extent of drinking and driving by motorists. The original goal in conducting the survey in Manitoba was to provide data which would go beyond that currently provided by law enforcement or accident statistics. The data has allowed for a more comprehensive understanding of issues concerning motorists and their driving behavior and will be of utility to government and community agencies alike.

APPENDIX I

CHARACTERISTICS OF NIGHT-TIME DRIVERS MANITOBA

Variable	Weighted Driver Proportions* P1		P2	
	%		%	
Driver Gender				
Female	23.7	(0.8)	15.5	(8.0)
Male	76.3	(0.8)	84.5	(8.0)
Driver Age Groups				
16-24	35.0	(2.1)	25.3	(6.9)
25-39	38.7	(1.8)	61.7	(11.2)
40-59	22.0	(0.1)	11.8	(3.0)
> 59	4.3	(0.4)	1.2	(1.3)
Survey Night				
Wednesday	20.5	(0.2)	13.4	(1.7)
Thursday	20.2	(-)	10.9	(1.6)
Friday	33.4	(0.2)	52.3	(13.6)
Saturday	25.9	(-)	23.4	(10.4)
Survey Time				
9:00 p.m. - 10:29 p.m.	33.4	(0.1)	32.1	(1.9)
10:30 p.m. - 11:59 p.m.	38.8	(0.1)	13.5	(1.1)
12:00 a.m. - 1:29 a.m.	17.6	(0.1)	27.3	(5.3)
1:30 a.m. - 3:00 a.m.	10.2	(0.1)	27.1	(2.3)
Blood Alcohol Content (mg./100 ml.)				
0-20 mg.	82.4	(1.6)	Not Applic.	
21-60 mg.	9.9	(0.4)		
61-80 mg.	2.4	(0.2)		
>80 mg.	5.3	(1.4)		
Vehicle Type				
Passenger Car	86.3	(1.3)	86.7	(13.8)
Lt. Truck/Van	13.2	(1.2)	12.5	(13.4)
Motorcycle	0.5	(0.2)	0.8	(0.2)
Driver Seat Belt Use				
Not Worn	23.8	(5.5)	35.5	(13.8)
Lap and Shoulder Assembly	70.8	(4.3)	57.7	(13.3)
Lap Belt Assembly Only	4.5	(0.8)	5.2	(3.3)
Not fitted	1.0	(0.3)	1.6	(2.8)

**Numbers in brackets are (1.645 x standard error of estimate) yielding 90% confidence limits for the estimates.*

P1: weighted proportion of all drivers

P2: weighted proportion of impaired drivers (BAC > 80 mg./100ml.).

(-): indicates that the % is less than 0.05.

(Categories for each of the variables under P1 and P2 add up to 100%)

Manitoba (Continued)

Variable	Weighted Driver Proportions* P1		P2	
	%		%	
Why Not Wearing Seat Belt				
1. uncomfortable/inconvenient	21.8	(1.8)		
2. short trip/in a hurry	21.7	(2.4)		
3. fear of being trapped	0.7	(1.1)		
4. don't believe in them	14.8	(3.2)		
5. against civil rights	0.8	(0.4)		
6. other	34.5	(4.5)		
7. don't know	5.7	(2.0)		
Licence Pate				
Manitoba	97.0	(0.7)	96.5	(6.1)
Outside Manitoba	3.0	(0.7)	3.5	(6.1)
Origin-Establishment				
Own home	26.9	(0.1)	15.9	(7.1)
Friend/Relative Home	22.5	(1.1)	26.6	(4.1)
Work	15.8	(0.1)	13.9	(2.5)
Restaurant/Bar/Club/Tavern	15.2	(1.8)	29.9	(16.0)
Recreational Activitiy	10.9	(1.0)	10.4	(23.0)
Shopping/Meeting	4.0	(0.8)	1.1	(2.1)
Other	4.7	(0.9)	2.2	(3.2)
Length of Trip				
1-8 km.	50.2	(4.3)	68.1	(16.3)
9-24 km.	30.8	(1.9)	19.8	(17.2)
25-50 km.	10.0	(0.9)	7.5	(0.6)
> 50 km.	9.0	(1.5)	4.6	(0.4)
No. of Vehicle Occupants				
Driver only	42.8	(1.0)	32.6	(1.3)
I passenger	38.5	(1.4)	41.8	(21.0)
2 passengers	10.3	(0.6)	9.0	(5.2)
3 passengers	6.5	(0.8)	9.8	(7.0)
4 or more passengers	1.9	(0.1)	6.8	(7.5)
No. of Drinks Consumed in Last 7 days				
0	36.2	(3.0)	0.4	(0.2)
1-5	34.5	(5.3)	31.2	(10.9)
6-10	14.4	(0.7)	37.8	(3.4)
11-20	9.2	(2.5)	16.4	(17.9)
> 20	5.7	(0.3)	14.2	(3.8)

**Numbers in brackets are (1.645 x standard error of estimate) yielding 90% confidence limits for the estimates.*

P1: weighted proportion of all drivers

P2: weighted proportion of impaired drivers (BAC > 80 mg./100ml.).

(-): indicates that the % is less than 0.05.

(Categories for each of the variables under P1 and P2 add up to 100%)

Manitoba (Continued)

Variable	Weighted Driver Proportions* P1 %		P2 %	
No. of Drivers Stopped by Police, Out of Every 100 Legally Impaired Drivers				
0	8.3	(0.3)	8.2	(8.5)
1	9.9	(0.6)	6.2	(7.4)
2	10.9	(0.4)	1.9	(1.5)
3-5	21.6	(2.0)	23.5	(26.5)
6-10	18.4	(1.0)	16.0	(4.3)
11-20	8.4	(1.6)	8.8	(2.0)
21-100	14.9	(0.8)	26.6	(15.1)
Don't Know	7.6	(0.5)	8.8	(0.3)
Most Effective Means of Deterring Drinking and Driving				
More Enforcement	27.3	(0.3)	23.9	(5.6)
Stiffer Penalties	31.4	(2.5)	14.0	(13.6)
More Education	9.3	(3.8)	19.4	(17.7)
Higher Drinking/Driving Age	1.6	(0.8)	2.0	(3.8)
Combination/Other	17.3	(0.8)	21.6	(9.2)
Don't know	13.1	(1.8)	18.9	(23.8)
Major Cause of Serious Traffic Accidents				
Driver Impairment	65.3	(3.3)	61.8	(12.6)
Poor Driving	26.7	(3.1)	27.9	(7.0)
Vehicle Defects/Environmental Factors/Other	5.0	(0.7)	5.6	(5.8)
Don't know	3.0	(0.4)	4.7	(0.3)
Think You Are Over the Legal Limit (BAC > 20 mg./100 ml.)				
No	48.8	(5.3)	51.3	(7.0)
Yes	10.6	(1.9)	24.5	(5.5)
Don't Know/refused	40.7	(3.4)	24.3	(1.5)
Location Where Most of Your Drinking Done Tonight (BAC >20 mg./100 ml.)				
Own home/friend, relative's home	36.2	(4.9)	29.3	(4.9)
Bar/Club/Tavern/Special Licence	43.6	(5.2)	43.5	(3.4)
Vehicle/Restaurant/Other	20.2	(0.3)	27.3	(1.3)
Anyone Discourage You From Driving Tonight (BAC > 20 mg./100 ml.)				
No	97.6	(-)	96.6	(4.6)
Yes	2.4	(0.1)	3.4	(4.6)

**Numbers in brackets are (1.645 x standard error of estimate) yielding 90% confidence limits for the estimates.*

P1: weighted proportion of all drivers

P2: weighted proportion of impaired drivers (BAC > 80 mg./100ml.).

(-): indicates that the % is less than 0.05.

(Categories for each of the variables under P1 and P2 add up to 100%)

Manitoba (Continued)

Variable	Weighted Driver Proportions* P1		P2	
	%		%	
Gender by Seat Belt Use				
Female				
Belt worn	19.9	(0.8)	11.0	(0.9)
Belt not worn	3.7	(2.0)	4.0	(6.1)
Male				
Belt worn	56.1	(4.7)	52.9	(16.0)
Belt not worn	20.3	(3.4)	32.1	(9.0)
Gender by Age Group				
Female				
16-24	7.9	(0.6)	4.5	(1.7)
25-39	9.7	(0.6)	9.0	(7.9)
40-59	5.5	(2.2)	2.0	(1.5)
> 59	0.6	(0.1)	N/A**	
Male				
16-24	27.2	(2.8)	20.9	(8.6)
25-39	28.9	(1.1)	52.6	(3.3)
40-59	16.5	(2.2)	9.8	(1.5)
> 59	3.7	(0.3)	1.2	(1.3)
Age Group by Seat Belt Use				
16-24				
Belt Worn	24.9	(0.3)	12.5	(7.6)
Belt Not Worn	9.9	(2.0)	12.2	(0.6)
25-39				
Belt Worn	29.4	(4.9)	40.5	(5.2)
Belt Not Worn	9.3	(3.4)	21.5	(16.3)
40-59				
Belt Worn	18.1	(0.5)	9.7	(1.0)
Belt Not Worn	4.0	(0.3)	2.4	(1.8)
> 59				
Belt Worn	3.6	(0.3)	1.2	(1.3)
Belt Not Worn	0.8	(0.2)	N/A**	

**Numbers in brackets are (1.645 x standard error of estimate) yielding 90% confidence limits for the estimates.*

P1: weighted proportion of all drivers

P2: weighted proportion of impaired drivers (BAC > 80 mg./100ml.).

(-): indicates that the % is less than 0.05.

(Categories for each of the variables under P1 and P2 add up to 100%)

***There were no observations recorded.*

APPENDIX 2

CHARACTERISTICS OF NIGHT-TIME DRIVERS WINNIPEG

Variable	Weighted Driver Proportions* P1		P2	
	%		%	
Driver Gender				
Female	23.2	(1.4)	15.3	(8.5)
Male	76.8	(1.4)	84.7	(8.5)
Driver Age Groups				
16-24	34.2	(2.6)	24.3	(8.3)
25-39	39.1	(1.8)	62.6	(11.9)
40-59	22.3	(-)	12.0	(2.2)
> 59	4.4	(0.7)	1.1	(1.4)
Survey Night				
Wednesday	19.8	(0.2)	13.1	(1.7)
Thursday	20.0	(-)	10.5	(1.2)
Friday	34.9	(0.2)	54.5	(13.8)
Saturday	25.3	(0.1)	21.8	(10.9)
Survey Time				
9:00 p.m. - 10:29 p.m.	32.2	(0.1)	32.9	(2.0)
10:30 p.m. - 11:59 p.m.	40.0	(0.1)	13.5	(1.8)
12:00 a.m. - 1:29 a.m.	17.8	(0.2)	27.5	(5.6)
1:30 a.m. - 3:00 a.m.	10.1	(0.2)	26.1	(1.8)
Blood Alcohol Content (mg./100 ml.)				
0-20 mg.	81.6	(1.9)	Not Applic.	
21-60 mg.	10.3	(0.5)		
61-80 mg.	2.6	(0.3)		
>80 mg.	5.5	(1.8)		
Vehicle Type				
Passenger Car	87.7	(1.6)	88.3	(14.6)
Lt. Truck/Van	11.9	(1.3)	11.3	(15.2)
Motorcycle	0.4	(0.2)	0.5	(0.6)
Driver Seat Belt Use				
Not Worn	24.3	(6.1)	34.1	(14.0)
Lap and Shoulder Assembly	70.6	(4.7)	59.3	(13.6)
Lap Belt Assembly Only	4.3	(1.0)	4.9	(3.6)
Not fitted	0.8	(0.3)	1.7	(3.3)

**Numbers in brackets are (1.645 x standard error of estimate) yielding 90% confidence limits for the estimates.*

P1: weighted proportion of all drivers

P2: weighted proportion of impaired drivers (BAC > 80 mg./100ml.).

(-): indicates that the % is less than 0.05.

(Categories for each of the variables under P1 and P2 add up to 100%)

APPENDIX 3

CHARACTERISTICS OF NIGHT-TIME DRIVERS OTHER MANITOBA

Variable	Weighted Driver Proportions*			
	P1		P2	
	%		%	
Driver Gender				
Female	26.7	(2.9)	17.1	(3.2)
Male	73.3	(2.9)	82.9	(3.2)
Driver Age Groups				
16-24	40.6	(1.2)	35.4	(2.2)
25-39	35.7	(1.0)	52.7	(8.0)
40-59	19.5	(0.8)	9.6	(9.3)
> 59	4.2	(1.3)	2.3	(0.8)
Survey Night				
Wednesday	25.1	(0.2)	16.4	(0.1)
Thursday	22.0	(-)	14.6	(2.4)
Friday	22.9	(-)	30.3	(1.2)
Saturday	30.0	(0.2)	38.7	(3.5)
Survey Time				
9:00 p.m. - 10:29 p.m.	41.6	(0.1)	23.7	(5.3)
10:30 p.m. - 11:59 p.m.	30.8	(-)	14.2	(5.7)
12:00 a.m. - 1:29 a.m.	16.4	(0.2)	25.0	(0.6)
1:30 a.m. - 3:00 a.m.	11.1	(0.1)	37.1	(1.0)
Blood Alcohol Content (mg./100 ml.)				
0-20 mg.	87.5	(0.5)	Not Applic.	
21-60 mg.	7.4	(0.2)		
61-80 mg.	1.5	(0.5)		
>80 mg.	3.6	(0.8)		
Vehicle Type				
Passenger Car	76.9	(0.2)	70.8	(2.2)
Lt. Truck/Van	22.3	(0.2)	25.4	(5.3)
Motorcycle	0.8	(0.3)	3.8	(3.0)
Driver Seat Belt Use				
Not Worn	20.5	(1.3)	50.2	(4.5)
Lap and Shoulder Assembly	71.7	(1.1)	40.6	(0.9)
Lap Belt Assembly Only	5.9	(0.3)	8.4	(2.1)
Not fitted	1.9	(0.6)	0.8	(1.5)

**Numbers in brackets are (1.645 x standard error of estimate) yielding 90% confidence limits for the estimates.*

P1: weighted proportion of all drivers

P2: weighted proportion of impaired drivers (BAC > 80 mg./100ml.).

(-): indicates that the % is less than 0.05.

(Categories for each of the variables under P1 and P2 add up to 100%)